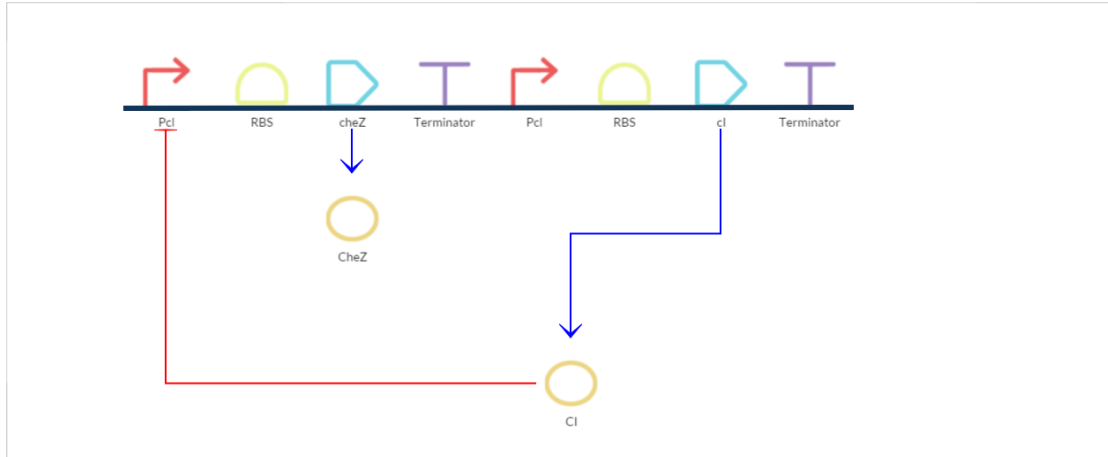


## Motility



### Formulae for two certain parts

TetR and tetR

$$\frac{d[\text{TetR}]}{dt} = \chi_{Plux} k_3 k_9 [\text{tetR}^F] - r_9 [\text{TetR}]$$

$$[\text{tetR}_1^F] = [\text{tetR}_1] \frac{[\text{LuxR}_1]^{n_4}}{k_4^{n_4} + [\text{LuxR}_1]^{n_4}}$$

CI1 and cI1

$$\frac{d[\text{CI}_1]}{dt} = \chi_{Ptet_1} k_2 k_3 [\text{cI}_1^F] - r_2 [\text{CI}_1]$$

$$[\text{cI}_1^F] = [\text{cI}_1] \frac{1}{1 + \left( \frac{[\text{TetR}]}{Q_1} \right)^{n_1}}$$

CheZ1 and cheZ1

$$\frac{d[\text{CheZ}_1]}{dt} = \chi_{PCI_1} k_3 k_{11} [\text{cheZ}_1^F] - r_{11} [\text{CheZ}_1]$$

$$[\text{cheZ}_1^F] = [\text{cheZ}_1] \frac{1}{1 + \chi_{PCI_1} \left( \frac{[\text{CI}]}{k_5} \right)^{n_5}}$$

$$[\text{CI}] = [\text{CI}_1] + [\text{CI}_2]$$

LuxI1 and luxI1

$$\frac{d[\text{LuxI}_1]}{dt} = \chi_{P_{con_1}} k_1 k_3 [\text{luxI}_1] - r_6 [\text{LuxI}_1]$$

LuxR1 and luxR1

$$\frac{d[\text{LuxR}_1]}{dt} = \chi_{P_{con_1}} k_1 k_3 [\text{luxR}_1] - r_7 [\text{LuxR}_1]$$

CI2 and ci2

$$\frac{d[\text{CI}_2]}{dt} = \chi_{P_{con_2}} k_2 k_3 [\text{cI}_2] - r_2 [\text{CI}_2]$$

### Parameter Table

k_1	Transcription rate of Pcon	1umol*min <sup>-1</sup>
k_2	Transcription rate of Ptet	5.25nmol*min <sup>-1</sup>
k_3	Translation rate of protein	42 min <sup>-1</sup>
k_4	Transcription rate of Plsr	2.3umol*min <sup>-1</sup>
K_5	Dissociation constant of CI	8nm
k_9	Transcription rate of pLux	5.25nmol*min <sup>-1</sup>
k_11	Transcription rate of Pci	1umol*min <sup>-1</sup>
r_1	Degradation rate of mRNA	0.0173 min <sup>-1</sup>
r_2	Degradation rate of CI	0.0692 min <sup>-1</sup>
r_6	Degradation rate of LuxI	0.0167 min <sup>-1</sup>
r_7	Degradation rate of AHL	0.0228 min <sup>-1</sup>
r_9	Degradation rate of TetR	0.0167 min <sup>-1</sup>
r_11	Degradation rate of CheZ	0.2604 min <sup>-1</sup>
n_1	Hill coefficient of TetR	2
n_2	Hill coefficient of Atz	2
n_5	Hill coefficient of CI	2
Q_1	Dissociation constant of TetR and m_CI2	40nm
Q_2	Dissociation constant of Atz-RBS and Atz	4mol

**Reference:** <http://2013.igem.org/Team:Nanjing-China>